

One-Pot Synthesis of Optically Tunable Functionalized Graphene Quantum Dots by Carbonizing Citric Acid

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Grapheme quantum dots (GQDs) present a new class of quantum dots with their unique properties, such as superiority in chemical inertness, high luminescent, biocompatibility and low toxicity. Consequently, GQDs are emerging as promising material for bioimaging, electrochemical biosensors, catalysis, and in photovoltaic devices. Specially, band gap of GQDs arise from quantum confinement and edge effects that can be tailor through the size or function groups of GQDs. Herein, shift of the photoluminescence of GQDs was observed due to functionalize GQDs. Functionalized GQDs are 1-3 layers and 1-5 nm in diameter was successfully prepared by one-step carbonization of Citric acid with Hydrazine. The GQDs that are functionalized with amine groups exhibited a red shift. These GQDS provide promising applications for biosensor, biological images and optoelectronic devices.